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THE NEW MOTORIZED ASPHALT SPREADER D-164

Eng B. N. Prusak

In October 1948, a test model of the new D-164 motorized asphalt spreader was brought out by the Kurgan Road Machinery Plant of the Ministry of Construction and Road Machinery.

Factory tests produced favorable results. After further tests, it will be placed in use.

The machine was built according to a design of the All-Union Scientific Institute of Road-Building Machinery, of which the chief designer is Eng D. I. Pleshkov. It is of considerable interest to roadbuilding organizations because of its advantages over earlier machines of this type, such as the D-141.

The D-164 spreader was designed for spreading fluid binding materials (bitumen, tar, emulsion) under pressure, while hot or cold, in construction of "black-top," gravel, and crushed rock roads. The method followed may be soaking, semisoaking, or surface treatment. The spreader was also designed for oiling and stabilizing the ground during construction of improved dirt roads. The motorized asphalt spreader can be used not only as a container for hauling, but also as a pumping station for transferring liquid materials from one container to another.

The main technical specifications of the D-164 motorized asphalt spreader follow:

Type of machine	self-propelled, truck
Motive base	YaAZ-200 chassis
Load capacity	5,000 liters
Spreading rate	0.5 - 7 liters/sq m
Spreading width	2.75 - 7 m

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Speed:

In operation	4 - 25 km/hr
Hauling	up to 60 km/hr

Dimensions:

Length	8,456 mm
Width (hauling)	2,700 mm
Width (operating)	7,000 mm
Height	2,950 mm

Total weight:

Of equipment on chassis	3,650 kg
Loaded	14,250 kg

The D-164 is mounted on a YaAZ-200 chassis made by the Yaroslavl plant.

The auxiliary equipment is driven by a special GAZ-NATI 27.5-horsepower engine mounted on its own frame which is attached to the longerons of the chassis. The separate engine permits spreading of bituminous materials independently of truck motor speed, a highly advantageous feature.

The tank capacity of the new spreader has been increased two thirds to 5,000 liters.

The fuel system for heating the materials in the tank has been improved by adding refractory-lined heating pipes and by using fuel jets operating on solar oil. The jets are supplied with fuel by a fuel pump putting out 75 liters per hour at 1,400 revolutions per minute and with air by a Kostochkin system No 2 blower which puts out 580 cubic meters per hour.

The tank of the spreader was made in elliptical form of 3-millimeter sheet steel. To minimize heat losses, the tank was covered with a layer of insulation, made of 50 millimeter-thick spun-glass mats. The outer side of the mats was protected by covering them with a one-millimeter-thick welded sheet-steel shell.

Within the tank there are two groins which prevent the liquids from shifting about when they are being transported.

For heating liquids, the tank is equipped with two 2-way fire tubes which are connected at one end with the heating chambers; the other ends of the tubes lead into the smoke chamber equipped with a flue for disposal of combustion products. The capacity of the fuel tank for the jets is 50 kilograms. This quantity assures continuous operation of two jets for two hours.

To prevent the tank from overflowing when it is being filled, it is equipped with an overflow pipe and a window in the upper part of the tank. The upper end of this pipe, extending from the tank, serves at the same time as a breather valve. On top of the tank there is an opening equipped with a filter for pouring in liquids. The opening, the lid of which seals it hermetically, serves also as a hatch for inspecting the tank. The tank has a floating indicator for controlling the level of the liquid. Behind the tank on its frame is the GAZ-NATI engine, which is started with a booster.

The engine crankshaft is connected through the clutch with the gear reducer which has, on the first shaft, a wide gear and a cam clutch for starting the blower and fuel pump (their operation is independent and simultaneous). On the second shaft of the reducer, there are two connected sliding gears for shifting the gears of the reducer. On the third shaft, there are two connected fixed gears from one side of which the bitumen pump (which has an output of 340 liters per minute at 120 revolutions per minute and 2,200 liters per minute at 815 revolutions per minute) is activated through a propeller shaft, and from the other side of which the bitumen spreading control gear is activated. Starting the engine is accomplished through the second shaft of the reducer by engaging the clutch. The GAZ-MATI engine gas tank holds 45 kilograms, which is enough for 8 hours operation.

Along the sides of the engine there are two platforms for the operator. The left platform, where all control levers are located, is intended as the operator's position during spreading; the right platform is intended for engine servicing and inspection.

Under the platforms is the bitumen line which leads to the spreader pipes with nozzles. The spreaders can be extended to 7 meters, their full width.

Auxiliary equipment of the asphalt spreader includes the following: interchangeable spreaders, a filling hose, a hose for manual spreading, a fire extinguisher, and a portable kerosene burner for heating the bitumen line which occasionally clogs up.

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